

Living Shorelines VS. Hardened Shorelines

By Elizabeth Hornstein

In the face of rising sea levels and more intense storms as a result of global climate change, many waterfront property owners have been putting up bulkheads, rip-rap, and other hard structures to protect their property. Unfortunately, what many fail to realize is that these hard structures can have negative ecological consequences and can often exacerbate the problem.

Because these hardened shoreline structures reflect wave energy, they alter the physical shoreline environment and natural sand movement patterns. Erosion or deposition of sediments up or downstream of the structure can occur and ultimately lead to destabilization of the shoreline. This may in turn encourage adjacent landowners to install hardened structures along their property. This “domino effect” of replacing natural shoreline with human-made structures can result in the loss of critical coastal habitats, including wetlands, beaches, and eelgrass beds. The loss of these habitats negatively impacts fishing and tourism industries as well as shellfish, fish, and birds that use these areas for spawning, feeding, or mating. These structures can also leach toxins, such as copper, chromium, and arsenic into the surrounding water, further impacting nearshore living resources. Additionally, they prevent the landward migration of coastal habitats which is a necessary response to the rising seas...



An alternative to hardened shoreline structures is living shorelines. Living shorelines use plants and other natural features such as sand, rocks, and bagged shells to stabilize estuarine coasts and bays and reduce wave energy. Living shorelines are designed to mimic the natural environment. They provide protection to waterfront properties, while at the same time provide numerous ecological benefits!

Benefits of Living Shorelines

- Maintains natural shoreline dynamics and sand movement.
- Creates habitat for fish, birds, and other wildlife. This in turn supports marine fishing and tourism industries.
- Provides attractive, natural appearance, and public access opportunities.
- Maintains or restores the connection between the water and upland habitat, which will allow for the natural landward migration of coastal habitats with rising seas.
- Natural or restored wetlands improve water quality through filtering nutrients and other pollutants.
- Often less costly than traditional shoreline stabilization methods.

The Peconic Estuary Program is currently funding a demonstration living shoreline project in Greenport, NY. Partnering with Peconic Land Trust and Cornell Cooperative Extension Marine Program, we hope to show the public how a living shoreline works and their many advantages. In preparation for this project, we held a volunteer event this past summer to prepare the salt marsh plants that will be used for this project. The plants will be planted in the spring of 2019, so stay tuned for more volunteer opportunities. Once the living shoreline is constructed, we will be monitoring the living shoreline to see how well it is working.



Wondering how to go about designing and constructing your own living shoreline? The New York State Department of Environmental Conservation has a [Living Shoreline Techniques and Guidance Document](#) that provides detailed information and useful tips. The basic steps to create a living shoreline are outlined below.

Living Shoreline Project Steps

- Evaluate and understand your site conditions, including the tidal range, wave energy, nearby plant and animal life, and water quality.
- Using the information collected in Step 1, determine what types of natural elements should be included in your living shoreline project and create a living shoreline design.
- Apply for a permit from the NYS Department of Environmental Conservation and other relevant agencies.
- Once you have received all the necessary permits, gather materials for your project and construct it.
- Conduct post-project maintenance and monitoring to ensure the success of the project

